



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,709	09/08/2003	Kuo-Hsing Teng	67,200-1150	2302
7590 TUNG & ASSOCIATES Suite 120 838 W. Long Lake Road Bloomfield Hills, MI 48302		12/29/2006	EXAMINER BUEKER, RICHARD R	
			ART UNIT	PAPER NUMBER 1763
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/29/2006	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/658,709 Examiner Richard Bueker	TENG ET AL. Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 06 December 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-3,5,9-11,13 and 17-25 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-3, 5, 9-11, 13 and 17-25 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

Art Unit: 1763

Claims 1-3, 5, 9-11, 13 and 17-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The newly added phrase "a plurality of gas streams in a planar dispersed pattern" in claims 1 and 17 and the newly added phrase "a plurality of secondary gas streams in a planar dispersed pattern" in claim 9 was not in applicants' specification as originally filed and is new matter. It is noted that "planar" is defined as "pertaining to, or located in, a plane; flat; or having a two-dimensional characteristic". It is noted that the pattern of the plural gas streams 72a illustrated in applicants' Fig. 3 have a three-dimensional characteristic rather than a two-dimensional characteristic, and the pattern of gas streams in the tank 41 is not planar in the manner now recited in the claims. Applicants have argued that the phrase "a plurality of gas streams in a planar dispersed pattern" is supported at page 16, lines 5-21 of the specification. It is noted, however, that this portion of the specification describes a pattern that is on the surface of the liquid when it is struck. It describes that pattern as a dispersed pattern. Lines 5-21 of page 16 does not describe a pattern of the plural gas streams themselves as now claimed and it doesn't describe a flat pattern of gas streams or a two-dimensional pattern of gas streams, as now claimed. If applicants had accurately claimed the disclosure at page 16, lines 5-21, then the claim 1 phrase "directing a plurality of gas streams in a planar dispersed pattern onto said planar exposed surface" have been written as "directing a plurality of gas streams to strike the planar exposed surface in a dispersed pattern that generally matches the pattern of the openings in the nozzle plate". It is noted also that the apparatus of Fig. Harada meets

the actual description from page 16, lines 5-21, because the openings in Harada's nozzle plate direct a plurality of gas streams to strike the planar exposed surface in a dispersed pattern that generally matches the pattern of the openings in the nozzle plate.

Claims 1, 2, 5, 9, 11, 17, 18, 20, 22, 23 and 24 are rejected under 35 U.S.C. 103(a) as obvious over Harada (6,402,844) taken in view of Fukada (5,733,375). Harada (see Fig. 6 and col. 6, lines 35-45) discloses a vaporizer comprising a tank for containing liquid HMDS primer to form a planar exposed surface of said liquid primer, and a nozzle assembly integrally formed in the ceiling of the tank. The ceiling of the tank can obviously be in the form of a plate and therefore can obviously be a nozzle plate (i.e. the top plate of the tank) comprising a plurality of openings disposed above the planar exposed surface of liquid primer. The openings are arranged for directing a plurality of gas streams onto said planar exposed surface of liquid primer to form primer vapor in a vapor collection space above said planar exposed surface of said liquid primer. Fukada has been added to illustrate that it was known in the prior art that the ceiling of an HMDS vaporizer can successfully be formed as a plate. In Fig. 6 of Fukada, the cap 21 contains the nozzle hole 27, and Fig. 2 of Fukada clearly illustrates that the cap 21 is in the form of a plate. Therefore, it would have been *prima facie* obvious to form the nozzle-equipped ceiling of the tank of Harada as a plate, as illustrated by Fukada. Regarding the limitations of claim 9, the upstream end of the nitrogen gas supply line of Fig. 6 of Harada is "a gas inlet pipe for receiving a primary gas stream" as recited in claim 9. Also, the downstream end of this nitrogen gas supply line is shown in Fig. 6 to be a manifold section, and this manifold section is "a housing

Art Unit: 1763

having a housing interior provided in fluid communication with said gas inlet pipe". Also, the top plate of the vaporizer body 31 is "a nozzle plate in downstream fluid communication with said housing, said nozzle plate having a plurality of openings for receiving the primary gas stream and ejecting a plurality of secondary gas streams onto said exposed surface of said liquid primer". Regarding claim 2, the nozzle plate of Harada is "for dividing said primary gas stream" as claimed. Regarding the recitation of plural radially extending rows of openings in claims 13, 21 and 25, it is noted that Fig. 6 of Harada is a schematic diagram, and the particular number of openings and the particular locations of the openings would have been a *prima facie* obvious matter of choice for one skilled in the art.

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of applicants' description of the prior art (see Fig. 1 and page 6, lines 14-18 of applicants' specification) which makes clear that prior art HMDS vaporizers were conventionally equipped with a liquid level sensor, and it would have been obvious to include such a level sensor in Harada's HMDS vaporizer to facilitate refilling of the tank when needed.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of applicants' description of the prior art. At page 7, lines 17-22 of applicants' specification the operation of the prior art vaporizer illustrated in applicants' Fig. 1 is described as having carrier gas supplied "at a pressure of typically about 50

Art Unit: 1763

Kpa", which is 375 torr. It would have been obvious to one skilled in the art to operate a vaporizer of the type shown in Fig. 4 of Fukuda at a pressure of less than atmospheric pressure because applicants teach that a sub-atmospheric pressure is typically used in this type of vaporizer.

Claims 1, 2, 5, 9, 11, 13, 17, 18 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) for the reasons stated above, and taken in further view of Bowles (853,915). Bowles (see Figs. 2 and 3) discloses a vaporizer analogous to that of Harada, wherein a nozzle plate directs plural gas streams onto a planar exposed surface of the liquid to be vaporized. In Bowles' vaporizer, the nozzle plate 4 is an integral part of the carrier gas supply manifold 6. If, for the sake of argument, claims 2, 9-11 and 13 were interpreted to require the claimed nozzle plate to be an integral part of a carrier gas supply manifold, it would have been obvious to one skilled in the art to provide the nitrogen gas supply manifold of Fig. 6 of Harada in the form taught by Bowles, because Bowles teaches one skilled in the art that his manifold and nozzle plate arrangement will successfully accomplish Harada's goal of directing plural gas streams onto the surface of a liquid to be vaporized. Also, regarding claims 13, 21 and 25, Bowles illustrates the use of plural rows of openings 7 (see Fig. 3 of Bowles). Also, the rows of openings of Bowles are arranged on lines that pass through the center of the nozzle plate 4 and therefore the rows of openings extend radially. It would have been obvious to use this arrangement of openings in the nozzle plate of Harada because Bowles teaches that it successfully accomplishes the goal of Harada.

Art Unit: 1763

Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) and Bowles (853,915) for the reasons stated above, and taken in further view of applicants' description of the prior art (see Fig. 1 and page 6, lines 14-18 of applicants' specification) which makes clear that prior art HMDS vaporizers were conventionally equipped with a liquid level sensor, and it would have been obvious to include such a level sensor in Harada's HMDS vaporizer to facilitate refilling of the tank when needed.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada (6,402,844) taken in view of Fukada (5,733,375) and Bowles (853,915) for the reasons stated above, and taken in further view of applicants' description of the prior art. At page 7, lines 17-22 of applicants' specification the operation of the prior art vaporizer illustrated in applicants' Fig. 1 is described as having carrier gas supplied "at a pressure of typically about 50 Kpa", which is 375 torr. It would have been obvious to one skilled in the art to operate a vaporizer of the type shown in Fig. 4 of Fukuda at a pressure of less than atmospheric pressure because applicants teach that a sub-atmospheric pressure is typically used in this type of vaporizer.

Applicants have argued that the final rejection of the last office action was premature. It is noted, however, that the new grounds of rejection contained in the previous office action was in response to a substantial change in the scope of the claims, and therefore was proper and not premature.

Applicants have argued that Harada does not teach that his nozzles are part of a nozzle plate. In response to this argument, the final status has been remove in order to

Art Unit: 1763

make the new rejections stated above based on Fukuda. The new rejections have been added to clarify that the ceiling of Harada's Fig. 6 vaporizer can obviously be in the shape of a plate. Since the nozzles of Fig. 6 of Harada are integrally formed in the ceiling, such a plate shaped ceiling would be a nozzle plate.

Applicants have also argued that Harada does not disclose a manifold. It is noted, however, that the schematic lines drawn in Fig. 6 of Harada above the nozzles 33 does indeed represent a manifold.

Regarding Bowles, applicants have argued that the perforated partitions 2 and 11 used by Bowles prevents the teachings of this reference from being combinable with Harada. It is noted, however, that Bowles was cited in the rejection merely for his teachings regarding the arrangement of plural carrier gas inlet nozzles in a vaporizer. This teaching can properly be combined with Harada's teachings which also relate to a vaporizer with plural carrier gas inlet nozzles. It is noted also, however, that Bowles' use of perforated partition plates to prevent the undesirable production of liquid particles is also applicable to Harada's vaporizer, because it was known in the art that droplet formation was undesirable in an HMDS vaporizer of the type taught by Harada and Fukada.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone

Art Unit: 1763

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Richard Bueker*

Richard Bueker  
Primary Examiner  
Art Unit 1763